



INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference T8467521WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/CA 03/00960	International filing date (day/month/year) 25.06.2003	Priority date (day/month/year) 25.06.2002
International Patent Classification (IPC) or both national classification and IPC C01B3/00		
Applicant		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the International application
  - VIII ☐ Certain observations on the International application

Date of submission of the demand  23.01.2004	Date of completion of this report  26.11.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Puetz, C  Telephone No. +31 70 340-3759  

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International application No. **PCT/CA 03/00960**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-30 as originally filed

**Claims, Numbers**

1-43 received on 27.05.2004 with letter of 27.05.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☒ the claims, Nos.: 44-69  
☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

**see separate sheet**

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	
	No: Claims	1,33
Inventive step (IS)	Yes: Claims	
	No: Claims	1-43
Industrial applicability (IA)	Yes: Claims	1-43
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

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**Re Item I:**

Some of the amendments filed with the letter of 27.5.2004 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.

The amendments concerned are:

- claim 1: no basis for formula (c) (not disclosed at all)
- claim 14: the list of oxides given in brackets is not allowable. Compounds used in examples are only disclosed in combination with other compounds/ compositions used in the same example.
- claim 21: In the text passage given as basis for the claim (page 15, lines 8-13), the grain size of the particles is said to be less than 100nm. grain does not appear in the wording of claim 21.
- claim 22: Hydrogen storage device is not disclosed. In the definition of (b) no basis could be found for "or the compound thereof" (line 6).
- claims 27,29-32: Metals/compounds used in examples are only disclosed in combination with other compounds/ compositions used in the same example. The claims are not allowable.
- claim 36: Original claim 24 is given as basis for new claim 36. said claim is not concerned with step (b) of the method as claimed in new claim 33.
- claims 37,40.42: In the relevant text passages it is not stated that step (b) is specifically concerned.

**Re Item V:**

1. Reference is made to the following documents:

- D1:** OELERICH W ET AL: "metal oxides as catalysts for improved hydrogen sorption in nanocrystalline Mg-based materials" JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 315, 2001, pages 237-242, XP002263119 ISSN: 0925-8388
- D2:** OELERICH W ET AL: "Comparison of the catalytic effects of V, V<sub>2</sub>O<sub>5</sub>, VN, and VC on the hydrogen sorption of nanocrystalline Mg" JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 322, no. 1-2, 28 June 2001 (2001-06-28), pages L5-L9, XP004243340 ISSN: 0925-8388
- D3:** WO 00/07930 A (UNIV HAWAII) 17 February 2000 (2000-02-17)
- D4:** US-A-4 507 263 (RON MOSHE) 26 March 1985 (1985-03-26)

2. At least claims 1 and 33 lack novelty over the teachings of documents **D1-D4**.

Document **D1** (see abstract) is concerned with the preparation of MgH<sub>2</sub>/(MexOy) composites using high energy ball milling. Hydrogen absorption and desorption kinetics of the nanocomposite materials are examined. The subject-matter of at least claims 1 and 33 of the present application is not novel.

Novelty objections also arise from **D2** (see abstract), **D3** (see page 6, lines 23 to page 7, line 17) and **D4** (see column 3, lines 29-48).

3. The subject-matter of at least claim 22 does not involve an inventive step in the sense of Article 33(3) PCT.

Document **D1** is regarded to represent the closest prior art. The subject-matter of claim 22 of the present application differs from **D1** in that a metallic hydrogen-absorbing or hydrogen-desorbing substance is additionally present. However, said additional features are conventional. It is already known that the composites from **D1** are capable to adsorb/desorb hydrogen. Therefore combination with further substances capable of absorbing/desorbing hydrogen would be within the ordinary skill of an expert in this art. An inventive step in the sense of Article 33(3) PCT cannot be acknowledged.

4. The dependent claims 2-21,23-32,34-43 are mere variations within the scope of claims 1,22 or 33 to which they depend. They would be patentable only to the

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extent the subject-matter of claims 1,22,33 to which they refer would fulfill the requirements of Articles 33(2) and 33(3) PCT.